

**WHAT IS CLAIMED IS:**

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- 5      1.      A balloon catheter, comprising
- a)      a catheter shaft having a proximal end, a distal end; and at least one lumen; and
- b)      a balloon on the distal end of the catheter shaft, the balloon having a working section and proximal and distal end portions which extend inwardly with respect to the working section, secured to the catheter shaft at secured ends within the working section.
- 10      2.      The balloon catheter of claim 1 wherein the end portions comprise funnel shaped inverted recesses with an inner diameter which is defined by an outer surface of the balloon which decreases from a location adjacent to the working section end to an end of the secured end.
- 15      3.      The balloon catheter of claim 1, wherein the proximal end portion has a tapered length tapering distally from a larger transverse dimension to a smaller transverse dimension.
- 20      4.      The balloon catheter of claim 1, wherein the proximal and distal end portions correspond to a proximal and distal surface of the working section respectively, along the longitudinal axis, and the proximal and distal working section surface areas are about 40% to about 80% of the total working section surface area.
5.      The balloon catheter of claim 3, wherein the tapered length is adjacent to the working section, and the tapered length extends to the catheter shaft.

6. The balloon catheter of claim 5 wherein an angle between the working section and the tapered length of about 30 degrees to about 50 degrees, and an angle between the tapered length and the catheter shaft of about 30 degrees to about 50 degrees.

5 7. The balloon catheter of claim 3, wherein the tapered length is adjacent to the catheter shaft and including a portion between the working section and the tapered length which extends generally parallel to the working section.

8. The balloon catheter of claim 7, wherein the angle between the catheter shaft and the tapered length is about 30 degrees to about 60 degrees.

10 9. The balloon catheter of claim 3, wherein the tapered length is adjacent to the working section, and the tapered length has a radius of curvature.

10 10. The balloon catheter of claim 1, further comprising a connecting fiber connecting at least a portion of the working section to the proximal and distal end portions.

15 11. The balloon catheter of claim 10, wherein the connecting fiber is selected from the group consisting of polymeric materials and metallic materials.

12. The balloon catheter of claim 10, further comprising a connecting fiber connecting at least a portion of the working section to the catheter shaft.

20 13. The balloon catheter of claim 1, wherein the distal end portion has a tapered length tapering proximally from a larger transverse dimension to a smaller transverse dimension.

14. The balloon catheter of claim 13, wherein the tapered length is adjacent to the working section, and the tapered length extends to the catheter shaft.

15. The balloon catheter of claim 14, wherein an angle between the working section and the tapered length is about 30 degrees to about 50 degrees, and an angle  
5 between the tapered length and the catheter shaft is about 30 degrees to about 50 degrees.

16. The balloon catheter of claim 13, wherein the tapered length is adjacent to the catheter shaft and including a portion between the working section and the tapered length which extends generally parallel to the working section.

10 17. The balloon catheter of claim 16, wherein the angle between the catheter shaft and the tapered length is about 30 degrees to about 60 degrees.

18. The balloon catheter of claim 13, wherein the tapered length is adjacent to the working section, the tapered length has a radius of curvature, and the tapered length extends to the catheter shaft.

15 19. A balloon catheter, comprising

a) a catheter shaft having a proximal end, a distal end, and at least one lumen; and

b) a balloon on the distal end of the catheter shaft, the balloon having a working section and proximal and distal end portions which extend inwardly with  
20 respect to the working section, secured to the catheter shaft at secured ends within the working section;

c) a tapered length tapering distally from a larger transverse dimension to a smaller transverse dimension on the proximal end portion; and

d) a tapered length tapering proximally from a larger transverse dimension to a smaller transverse dimension on the distal end portion.

5 20. A balloon catheter assembly, comprising

a) a catheter shaft having a proximal end, a distal end, and at least one lumen; and -

10 b) a balloon on the distal end of the catheter shaft, the balloon having a working section and proximal and distal end portions which extend inwardly with respect to the working section, secured to the catheter shaft at secured ends within the working section;

c) a tapered length tapering distally from a larger transverse dimension to a smaller transverse dimension on the proximal end portion;

15 d) a tapered length tapering proximally from a larger transverse dimension to a smaller transverse dimension on the distal end portion; and

e) a stent disposed about the balloon.